**Question Shells**

1. **Initial eliciting of students’ thinking**

* *Can you explain how you got your answer?*
* *Was this problem hard? What was hard about it?*
* *What have you found so far?*
* *Can you explain the first step you took to solve the problem?*
* *How did you begin working on this problem?*

1. **Probing students’ answers**
   1. **Trying to figure out what a student means or is thinking when you don’t understand what they are saying**
   2. **Checking whether right answers are supported by correct understanding**
   3. **Probing wrong answers to understand student thinking**

* *Can you repeat that?*
* *What do you mean [by \_\_\_\_\_\_]?*
* *Can you explain how you got [that answer]?*
* *So what you’re saying is \_\_\_\_\_\_\_?*
* *Can you give me an example?*
* *Why do you think that?*
* *Can you show me how you got your answer?*
* *How do you know?*
* *Why did you \_\_\_\_?*
* *How did you get \_\_\_\_?*
* *Could you use [materials] to show me how that works?*
* *Walk me through your steps. Where did you begin?*
* *When you say \_\_\_\_, do you mean \_\_\_?*
* *Could you say a little more about your idea?*
* *Can you try to explain that in a different way?*

1. **Supporting students to make connections (e.g., between a model and a mathematical idea or a specific notation)**

* *What does this represent?*
* *Have you seen an example of this anywhere else? Where?*
* *Does this remind you of anything?*
* *How does that remind you of \_\_\_?*
* *If \_\_\_ equals \_\_\_, what would \_\_\_ equal?*
* *How does [one representation] correspond to [another representation]?*
* *Can you think of another problem that is similar to this one?*
* *How does that match what you wrote here?*
* *Can you use the [representation] to explain what you are thinking?*
* *How is this similar to what we worked on about \_\_\_\_\_?*
* *How is this related to [a particular problem the student already solved or something students already learned]?*
* *How can we make a [picture, graph, model, chart] of this solution?*
* *What part of the problem/solution does this [pointing to a particular part of representation] represent?*

1. **Guiding students to reason mathematically (e.g., make conjectures, state definitions, generalize, prove)**

* *Can you explain why this is true?*
* *Could you prove that?*
* *Can you link that to another idea?*
* *Can you define that?*
* *Tell me more about that.*
* *Are there any more examples?*
* *How are these connected?*
* *Does this method always work?*
* *Why does that work in this case?*
* *How do you know it works in all cases?*
* *When do you think that would be true?*
* *Do you notice any patterns?*
* *What do these solutions have in common?*
* *Can this method be used for other problems?*
* *What do you already know that could help you figure that out?*
* *Have we found all the possible answers?*
* *What about [counterexample]?*
* *Can you represent the solution in another way?*
* *Using this problem as an example, what can you say about problems like this in general?*

1. **Extending students’ current thinking, and assessing how far they can be stretched**

* *What happens if you plug in different numbers?*
* *How would you explain that to a \_\_\_ [younger grade] student?*
* *Are any other answers possible?*
* *What changes if you (add, subtract, multiply, divide) instead of (add, subtract, multiply, divide)?*
* *How else can you express that number?*
* *Can you give an example?*
* *What happens if you change the sign [of the number]?*
* *Can you think of a situation where that wouldn’t be true?*
* *Would it still be true if \_\_\_\_?*
* *What would happen if \_\_\_\_?*
* *Is that always true?*
* *How can we test it?*
* *Can we come up with a general rule?*
* *What other ways can we represent the solution?*
* *Can you show it (with a picture)?*
* *Can you solve it a different way?*
* *Can you use this same method to solve \_\_\_\_\_?*
* *What would happen if the numbers were changed to \_\_\_\_\_?*
* *What if the problem was like this instead: [give slight variation of problem]?*
* *If someone said [wrong answer], how would you respond?*
* *Can you think of another problem that could be solved with this method?*